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Setting Flow Criteria

Summary: This item consists of two presentations:

- a scientific overview for setting flow criteria for estuaries and rivers, and
- examples of effective performance measures designed to evaluate the effectiveness of flow standards and restoration projects.

The presentations will be led by the Delta Science Program's Lead Scientist and will include background information and case examples relevant to managing the Delta in a manner consistent with the coequal goals.

Background

At the last Council meeting a discussion on setting flow criteria for estuaries and rivers and examples of large-scale restoration programs that include performance measures for ecosystem and water supply occurred between Dr. Lucas Paz (Arcadis) and Council Member Randy Fiorini. The Delta Science Program's Lead Scientist, Dr. Cliff Dahm, has coordinated with Dr. Paz to follow up on the discussion. Dr. Dahm will present background information on scientific methodologies for setting flow criteria for rivers and estuaries and then, joined by Dr. Paz, present an overview of effective performance measures designed to evaluate the effectiveness of flow standards and restoration projects.

8.a. - Science Overview for Setting Flow Criteria for Estuaries and Rivers

Dr. Dahm will lead a 30-minute presentation allowing for 30 minutes of discussion on setting flow criteria for estuaries and rivers. The presentation will include the following:

- ***National and international examples of setting flow criteria.*** National examples will include statutes for setting flow criteria from the states of Florida and Texas. International examples will include the setting of flow criteria and related legal requirements for the Republic of South Africa and Australia.

- ***Approaches to setting flow criteria.*** An overview of the approaches and methodologies used to set flow criteria in estuarine and river systems will be presented. The approach used to set flow criteria by the Southwest Florida Water Management District for rivers, springs, and estuaries over the past decade will be provided as an example.

- ***Approaches to setting flow criteria in the Delta.*** Dr. Dahm will introduce approaches to setting flow criteria in the Delta and invite a representative from the California State Water Resources Control Board (Board) to expand upon the methodology used to set the Board's Delta flow criteria. Dr. Dahm will also invite Dr. Paz to present developing approaches being used to set flow criteria in rivers and estuarine systems in the Western United States.

8.b. - Performance Measures, Evaluation Criteria, Multiple Stressors, and Adaptive Management

Dr. Dahm will lead a 30-minute presentation allowing for 30 minutes of discussion on performance measures, evaluation criteria, multiple stressors, and adaptive management. The presentation will include the following:

- ***The need for performance measures.*** Dr. Dahm will provide an overview of performance measures, what they are, their relationship to evaluation programs and monitoring, and their importance relevant to evaluating the effectiveness of flow standards and restoration projects.

- ***Examples of successfully implemented restoration and evaluation projects.*** Dr. Dahm will provide an overview of the metrics and key elements of two successful restoration and evaluation projects, the Kissimmee River Restoration Project (south Florida) and the Healthy Waterways Initiative (South East Queensland, Australia) Both projects have implemented successful adaptive management protocols to examine the multiple stressors affecting these watersheds.

- ***Developing performance measures for Western United States aquatic ecosystems.*** Dr. Paz will provide a summary of emerging recommended performance measures for restoration projects in the Western United States with examples from Puget Sound, the Lower Columbia River, and the Lower Colorado River.

Attached are two highly regarded and cited papers on flow standards that provide background for the presentation to the Council. (Attachment 1) *Instream flow Science for Sustainable River Management* by Geoffrey E. Petts focuses on the current state of the science of setting flows and (Attachment 2) *Basic Principles and Ecological Consequences of Altered Flow Regimes for Aquatic Biodiversity* by Stuart E. Bunn and Angela H. Arthington focuses on principles. The presentation will be provided at the meeting.

Attachments

Attachment 1: Instream Flow Science For Sustainable River Management; Geoffrey E. Petts
Attachment 2: Basic Principles and Ecological Consequences of Altered Flow Regimes for Aquatic Biodiversity; Stuart E. Bunn and Angela H. Arthington

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